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Policy options and possible actions to expedite implementation: inter-linkages and cross-cutting issues

Report of the Secretary-General

Summary

Strong inter-linkages among the four issues in the thematic cluster exist so that policies and measures aimed at one issue may have co-benefits for other issues. Providing access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services may advance industrial development, reduce air pollution and lower greenhouse gas emissions. Such inter-linkages are highlighted in the present report with a view towards developing a menu of policy options and measures of optimal effectiveness. The interlinked aspects of those issues are also reflected in the separate thematic reports where appropriate. International cooperative efforts can help to ensure that urgent and effective action is taken that build on the inter-linkages among those issues to further implementation and thus effectively contribute to achieving the goals of sustainable development.

Furthermore, most of the cross-cutting issues identified at the eleventh session of the Commission on Sustainable Development, including those related to the means of implementation, are relevant within the context of the thematic cluster of issues under consideration. Policy options and measures to further sustainable development goals with respect to the cross-cutting issues and energy for sustainable development, industrial development, air pollution/atmosphere and climate change are identified.

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I. Introduction

1. At its fourteenth session, the review session of the second implementation cycle 2006-2007, the Commission on Sustainable Development undertook an evaluation of progress in implementing Agenda 21, the Programme for the Further Implementation of Agenda 21, the decisions taken at the sixth session of the Commission (dealing with industry and sustainable development) and at its ninth session (dealing with energy for sustainable development and protection of the atmosphere), and the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation), while focusing on identifying constraints and obstacles in the process of implementation with regard to the current thematic cluster. This cluster covers the issues of energy for sustainable development, industrial development, air pollution/atmosphere and climate change. The report of the review session (see E/2006/29) includes a chairperson's summary that reflects the constraints and obstacles, and possible approaches and best practices for the implementation of those intergovernmental agreements, as well as the way forward identified by the Ministers attending the high-level segment.

2. The present report is a contribution to the Commission's consideration of policy options and possible actions to address the constraints and obstacles to implementation identified in the report of the review session. The fifteenth session of the Commission on Sustainable Development will take policy decisions on practical measures and options to expedite implementation for the selected thematic cluster of issues, taking account of the discussions of the intergovernmental preparatory meeting, reports of the Secretary-General and other relevant inputs.

3. The present report draws on a number of sources, including national reports and case studies submitted by Member States, the outcomes of regional implementation meetings, and contributions from UN-Energy, major groups and secretariats of various United Nations conventions. As close linkages exist among the four issues of this thematic cluster, the relevance of those inter-linkages for policy options is considered in a separate section. Cross-cutting issues identified at the eleventh session of the Commission are considered in the present report as well as in the four thematic reports prepared for the current session (E/CN.17/2007/2-5).

4. A menu of policy options and measures for implementation at the regional level are included in separate annexes to the present report that reflect the unique characteristics and needs of each region. The annexes were prepared by the respective United Nations regional commissions ECA, ECE, ECLAC, ESCAP, ESCWA, annexes I-V, respectively.

II. Inter-linkages among issues

5. Policy options and possible actions can be more effective if their interlinked aspects are taken into consideration at the outset. Many policies and actions can have multiple benefits. Policies to enhance energy efficiency are likely to have positive impacts on industrial development, air pollution/atmosphere and climate change. Capacity-building projects, such as those aimed at improving information technology capacities, may have impacts on a wide range of areas, including the delivery of sustainable energy services, industrial development and institutional

development. A well-designed forest management policy can contribute to mitigating climate change by sequestering carbon in the trees and soil while providing local communities with livelihoods. Health benefits can also accrue from using energy more efficiently. Other notable examples include actions for improving energy access in rural areas that open opportunities for small-scale industry development and thereby for income generation, including for women. Utilizing modern energy services reduces indoor air pollution, thus improving prospects for better health among women and children.

6. Some policy options and actions require an integrated approach to be effective. Thus, actions taken to transfer energy-efficiency technology and the associated know-how to developing countries often require complementary financing arrangements to enable entrepreneurs to make the necessary investment in such technologies. Similarly, policies to disseminate improved, drought-resistant crops in areas subjected to changing climate may not be effective without appropriate agricultural extension services or financial arrangements for those who are unable to buy the necessary inputs. An integrated process of decision-making that takes such factors into account at an early stage has been proven to enhance policy effectiveness. Although an integrated approach may add to the complexity of decision-making, it can help to ensure that better decisions are made.

7. A holistic approach using national sustainable development strategies and other national sustainable development plans can yield better results by addressing the inter-linkages among the issues, especially when considering policy options, undertaking actions and implementing on-the-ground projects. In assessing energy policy impact and effectiveness, it has become clear that countries that have incorporated energy considerations into national planning, including some countries of South America, have been able to achieve co-benefits, such as enhanced employment opportunities. National plans can highlight rural-urban interfaces that are important for the successful implementation of energy and industrial development policy options and possible actions, and can bring about improvements with regard to air pollution/atmosphere and climate change as well as socio-economic development.

8. Options for strengthening national development plans include highlighting the importance of, and including energy aspects in national sustainable development strategies and other national development plans, an often overlooked area. Utilizing analytical tools that enhance development plan formulation can lead to better decision-making. Energy indicators for sustainable development, which are flexible tools designed for use at the national level, could be used to assess potential impacts of various policy options on sustainable development for the medium and long term.

9. Inter-linkages with the issues of other thematic clusters are also important. Water provides an important link not only to energy and industrial development, but also to agriculture. Integrated water resources management is a planning and implementation process that encourages a community-participation approach for pursuing forward-looking management and development of water resources. It can be applied as a framework within which to assess and allocate competing water uses, for example for hydropower generation, power plant cooling, and agricultural, industrial and domestic uses. Given these important intersectoral inter-linkages, more effort could be given to assisting developing countries with the preparation of integrated water resources management plans, in accordance with the Johannesburg

Plan of Implementation. Policies for promoting freshwater extraction, collection and distribution using renewable sources of energy have proven to be particularly effective in addressing freshwater constraints of small island developing States.

10. Climate change impacts can pose a threat to prosperity and security through large-scale social and economic disruptions. Major shifts in rainfall patterns could lead to reduced agricultural productivity and hence reduced food security and increased poverty, particularly in least developed countries. Also, sea-level rise could lead to the inundation of many low-lying countries and regions, especially the small island developing States. Other impacts include increased water shortages and decreased water quality, and more frequent droughts and floods, as well as the spreading of infectious diseases. All those impacts could threaten the physical security of human settlements and economic infrastructure, as well as human health systems. Potential consequences include migrations from the affected regions to other parts of the world and exacerbation of conflicts over resources at various levels. Therefore, protecting the climate system is a prerequisite for economic prosperity and sustainable development at all levels.

11. Policy options and possible actions directed towards promoting regional and interregional cooperation can be enhanced by greater focus on the inter-linkages among the four issues of the thematic cluster. Among the range of issues in development planning, regional plans for some subregions of Africa have sought to facilitate the efficient use of shared resources, including hydropower, natural gas and the interconnection of national power grids to achieve specific goals of improving access to energy, alleviating poverty, promoting industrial development and reducing air pollution. Taking action to promote regional and international cooperation on improving energy infrastructure can also help to allay energy security concerns.

III. Cross-cutting issues

12. Some of the cross-cutting issues identified at the eleventh session of the Commission on Sustainable Development are particularly relevant to the cluster of themes under consideration. They are considered here and in the thematic reports (E/CN.17/2007/2-5) as appropriate. Owing to the strong inter-linkage, the cross-cutting issues of changing unsustainable consumption and production patterns and sustainable development in a globalized world are covered in the thematic report on industrial development (E/CN.17/2007/3).

13. Many of the policies identified in this cluster and which are intended to improve access to modern energy services, such as cooking and heating fuel for the poor, which also curb indoor air pollution, would be of particular benefit to women who, with children, are most likely to suffer its effects. In choosing from a menu of options, policies could be designed to ensure optimal co-benefits, including more time for child-rearing, increased economic opportunities, and better access to health services and education. The highlights the importance of integrating the concerns of women and children into overall energy planning and of linking access to energy for women with income generation and enterprise development opportunities.

14. Despite ample energy resources, access to energy in sub-Saharan Africa remains very low and supplies of electricity are confined to urban centres, sometimes with poor quality. The geographical distribution of energy resources such

as hydropower, as well as small national energy markets, means that Africa could benefit from policies to promote the development of cross-border infrastructure for energy trade, as noted in the thematic report on energy for sustainable development (E/CN.17/2007/2). Strengthening such infrastructure could be carried out in the context of deepening regional integration, which remains a priority for the region as a whole. Although African economies have benefited from an economic upturn, partly as a consequence of the rise in commodity prices, there is a need to implement policies promoting diversification, in particular by creating an enabling environment for industrial development. At the international level, initiatives for enhanced market access for African countries could spur industrial development, in combination with appropriate national policies, as advocated in the New Partnership for Africa's Development (NEPAD). While Africa is responsible for only a small fraction of total global greenhouse gas emissions, a combination of geography and socio-economic development means that the continent exhibits a high degree of vulnerability to the adverse impacts of climate change and climate variability.

15. Policies and measures on the thematic cluster of issues under consideration have potential to contribute significantly to achieving sustainable development goals in small island developing States and least developed countries. Encouraging the production of renewable energy from sugarcane, coconuts and other biomass, can potentially have a positive impact on rural development and energy security in some small island developing States and least developed countries. The use of renewable energy, such as biofuels and solar energy, on remote islands and rural areas lacking electricity can facilitate the development of micro-industries and small business opportunities. Policies and measures to promote renewable energy for small and medium-size enterprises and to encourage local industry in small island developing States to increase renewable energy use include fiscal and economic incentives for users of renewable energy, import tax and duty concessions, incentives to support the use of cleaner-burning biofuels and the development of alternative cooling methods for the tourism sector, and the establishment of "internal catalysts" in the form of local agencies to promote renewable energy development. As noted in the report on energy for sustainable development (E/CN.17/2007/2), public-private partnerships are another way to encourage technology transfer and the investment of private funds and expertise in small island developing States and least developed countries. In many small island developing States there is potential to expand linkages between tourism and agriculture and appropriate policies and measures include promoting the use of locally produced food in the hotels and increased regional cooperation and centres of excellence for knowledge-sharing, joint research and data collection.

16. Policy options and actions to address public health concerns, if taken in the broad framework of sustainable development, can support adaptation to health impacts of climate change. Measures taken to strengthen primary health-care systems, such as public health monitoring, disease surveillance and control programme, disaster preparedness, and others can help to improve emergency response to victims of heat waves and other severe weather events associated with climate change, as well as to increased incidences of infectious diseases as a result of intensified rainfall and flooding in warmer regions.

17. As a cross-cutting issue, the contribution of education to achieving the goals of sustainable development can hardly be overemphasized. Moreover, science and technology education, and research and development capabilities can strengthen

capacities to undertake work on each of the four issues. The importance of education is emphasized by the United Nations Decade for Education for Sustainable Development 2005-2014, which is led by the United Nations Educational, Scientific and Cultural Organization. It has elaborated a framework that could benefit from further international support. As an element of an integrated national sustainable development strategy, some Governments have provided an enabling environment for the establishment of science and technology parks open to joint ventures and foreign investment. Parks, such as those established in Brazil, China, India and Qatar, could bring scientific research and development strengths together with industrial and entrepreneurial expertise in support of the issues of this thematic cluster.

IV. Means of implementation

18. An adequate and predictable flow of financial resources is a key requirement for implementing the intergovernmental agreements related to the four issues of this thematic cluster. Responsibility for decision-making, implementing and funding policy options and actions lie in the first instance with national Governments, with local governments also playing an important role — depending on the degree of centralization — in providing infrastructure and services. Policy approaches for meeting financing needs in this thematic cluster vary depending on the particular challenges and constraints to be addressed. Nevertheless, bilateral support provided through official development assistance (ODA) and multilateral support from the Global Environment Facility (GEF) and international financial institutions (IFIs) will continue to be important financing sources for many developing countries, especially for infrastructure projects where large-scale investments with long payback periods are required.

19. Although a number of countries have benefited from debt reduction or cancellation, the magnitude of the challenges, particularly with respect to energy access, underlines the need for continued and increased support, including ODA. International support could contribute significantly to public infrastructure projects in developing countries, which is likely to be crucial in certain areas particularly in guaranteeing access to energy services for the poor, at times supplementing private investment. This could include public-private partnerships and mechanisms to cover certain types of risk, such as country risk or regulatory risk. Various studies indicate that major investment in energy infrastructure will be required to provide access to modern energy services for those currently relying on traditional fuels. Regions having difficulty attracting private sector external financing could be considered for ODA on an expedited basis, especially sub-Saharan Africa. International assistance to promote capacity-building related to financing, such as how to develop bankable proposals, leverage existing funds and develop and utilize financial instruments, could promote implementation. At the regional level, in cooperation with the IFIs, and, in particular, with the regional development banks, countries could strengthen efforts to pool resources for the financing of projects with specific regional benefits such as in East Africa, which is currently embarking on the regional interconnection of national power grids, as well as in Central and South America.

20. The IFIs, in general, could play a more active role in supporting domestic and regional finance markets and in strengthening financing facilities for investment in energy and industrial projects. The IFIs, as well as bilateral development

cooperation agencies, could focus on mitigating perceived investor risk, especially in countries which have been overlooked by the private sector in the past. Insurance schemes for political risk are one option which can be effective in facilitating foreign direct investment. Among the options to reduce borrowing costs in high-risk environments are co-financing arrangements and revolving funds which permit a blending of finance from domestic financial institutions, bilateral donors and from international or regional development banks. In this way, the international financial institutions with access to concessional funds could enable domestic institutions to improve the terms and lower the costs of their loans.

21. The flow of funds into "emerging markets" from institutional and other portfolio investors seeking high returns has increased in recent years. Portfolio equity flows have grown rapidly with such investments mostly focused on opportunities generated by utility privatization or deregulation of sectors like telecommunications. Net debt flows associated with medium- and long-term bond issues to private creditors have also grown and, in 2005, were roughly equal to portfolio equity flows. Some private investment funds specifically offer long-term debt finance on commercial terms to infrastructure development as, for example, in the emerging markets of Africa. Institutional investors have also participated in international financial institution-led loan syndications in developing countries spanning a broad range of sectors, including extractive industries like oil and gas, infrastructure like power and telecommunication facilities, and both heavy and light industries. Such teaming between the IFIs and institutional investors leverages the funds of the former while reducing risks to the latter. Another leveraging option could be the issuance of "global development bonds", which use tax credits, partial guarantees/insurance, and/or matching funds as donor government enhancements to leverage private capital for "clean energy and sustainable development" investments in developing countries.

22. Tapping domestic capital markets could also be an option for a small but growing number of developing countries. Policy options and possible actions to strengthen the capacity of Governments, local authorities and enterprises to raise capital domestically include such reforms as the establishment of a legal framework for securities issuance and trading, the promotion of local credit-rating agencies and utilizing national development banks where feasible. Domestic capital markets play a growing role in financing industrial development and energy investments in a number of developing countries. Local currency bond markets are now the fastest growing category of emerging market debt. In the case of energy infrastructure, for local authorities and utilities that have difficulty raising financing individually, bond pools or bond banks could offer the opportunity to spread risks across a heterogeneous group of municipalities or other subnational entities. For a large number of developing countries, a priority policy concern is to strengthen domestic financial institutions so that they can act effectively as intermediaries for international financial inflows. In particular, policies and practical measures could encourage domestic banking institutions to extend longer-term finance for large-scale infrastructure projects. Those institutions would also benefit from a strengthening of their capacities to evaluate investment proposals, manage risk and allocate investment capital efficiently.

23. For many low-income developing countries, strengthening measures to increase private investment, including FDI, in their productive sectors remains a high priority. Improving the investment environment and regulatory frameworks

could assist in attracting private sector investments for industrial development, as well as in the provision of energy services. One practical action to enhance FDI could be to support capacity-building efforts of developing countries and countries with economies in transition in their efforts to strengthen their national policy framework for attracting FDI, such as through the Investment Climate Facility for Africa. Complementary investments in physical infrastructure and human capital are usually important for attracting FDI, especially as production becomes more knowledge- and technology-intensive. Recent evidence suggests that joint ventures undertake larger investments in research and development and technology upgrading than do wholly foreign-owned subsidiaries. Governments may wish to consider encouraging such ventures.

24. Supportive policies could encourage local private sector and community provision of energy services to small, remote communities where grid extension would be very costly. One form of government programme that has been successful at minimal cost involves providing loan guarantees for entrepreneurs investing in small-scale, decentralized infrastructure and services like mini-grids based, for example, on renewable energy sources. Such programmes have been coupled with training to improve the ability of entrepreneurs to articulate business plans for loan applications. The IFIs could also assist in meeting the relatively small-scale borrowing requirements of stand-alone and mini-grid energy suppliers, for example, by establishing energy financing facilities which operate similarly to lines of credit, so as to streamline administrative procedures and contain overhead costs for small-scale loans.

25. Micro-finance institutions (MFIs) can be effective in reaching small-scale entrepreneurs, particularly the poor without access to commercial credit, especially poor women. Such financing could be used to expand the decentralized provision of access to energy services and to facilities for small-scale handicraft and manufacturing activities in poor communities. Evidence suggests that micro-finance schemes are even more effective when combined with business skills training for entrepreneur-borrowers. Such training can also contribute to higher rates of loan repayment, thereby enhancing the financial sustainability of MFIs. Many MFIs continue to rely on grants and subsidized credit from international donors, which are of limited size and not highly predictable beyond the short term. Among the options for achieving greater financial stability are administrative cost containment, charging higher interest rates on loans with the risk of losing some of the poorer borrowers, and obtaining access to commercial financing on favourable terms.

26. Closer integration of micro-finance with domestic financial markets could facilitate funding the growth of loan portfolios by drawing on the mainstream financial sector, where adequately developed. Institutions with a strong focus on lending to the poor and a high positive social impact could benefit from government and international support in securing predictable long-term financing. The role of IFIs in providing access to international financial markets on favourable terms could be strengthened.

27. New international investment frameworks and instruments could make a valuable contribution to meeting investment needs for providing access to cleaner energy services for the poor in developing countries. Finalization of the World Bank's investment framework for clean energy and sustainable development has the potential to contribute importantly to implementation efforts. The streamlining of

procedures for existing financing mechanisms like the GEF and the Clean Development Mechanism of the Kyoto Protocol are also areas for possible action.

28. International trade is expanding and would have even greater potential if the Doha Development Round were to reach a successful conclusion with an agreement that addresses key market-access concerns of developing countries. Regardless of the outcome, there will be an ongoing need for international technical support to developing countries, especially the least developed countries and countries in Africa, to strengthen trade infrastructure and institutions, simplify regulations and procedures governing trade, and enhance capacity to diversify and add value to exports. Further international support could be considered for the World Trade Organization's Integrated Framework for Trade-Related Technical Assistance and its Trust Fund, an important aid-for-trade programme that assists least developed countries in developing their trade capacity.

29. Technology transfer is important for realizing progress on all four issues of this thematic cluster. It includes the transfer of technological systems and equipment, as well as the transfer and absorption of the know-how to operate, maintain and adapt energy and industrial technologies to local circumstances. Technology transfer could be promoted through increased technical assistance by developed countries and international organizations, including through support for joint research and development. Given the strength of the private sector's technical know-how, initiatives for technology transfer and diffusion could benefit from public-private partnerships. These partnerships hold potential for facilitating such transfer and diffusion where intellectual property rights are concerned. Transfer of technology and know-how could also be facilitated by encouraging FDI, particularly where broader linkages can be established, such as through joint ventures and strengthening of local supply chains. The effectiveness of such programmes could be enhanced by incorporating capacity-building and training components.

30. Making real progress in the areas covered by the four issues of this thematic cluster require augmented and focused capacity-building at the local, national and regional levels. The development and implementation of appropriate policies to address complex issues, such as adaptation to climate change or promoting industrial development in the context of global competition, pose severe challenges for developing countries. Increasing access to modern energy services would require strengthening the technical and managerial capacity of government agencies and public utilities in many countries. Capacity-building programmes could be built into projects whether funded by government, bilateral ODA, IFIs or the private sector. Targeted capacity-building programmes could be implemented, in coordination with local and national institutions, in individual research institutions, universities and vocational schools. Regional projects, such as the interconnection of national power grids, can provide the motivation for strengthening relevant national institutions through capacity-building. Strengthening South-South cooperation for building capacities is a potentially effective option for sharing information, knowledge and technical know-how. Capacity-building could also be facilitated by modern web-based electronic communications and improved access to libraries and electronic knowledge banks, as well as online networks and links to professional associations and experts.

31. Governments are important consumers of energy services. Governments also have a large role in state-owned energy enterprises in many developing countries.

Thus, sustainable procurement programmes are an option by which Governments can use their financial power to advance goals of sustainable consumption and production, for example, through the purchase of equipment meeting certain energy efficiency standards or of electricity with a certain portion produced from renewable sources.

V. Policy options and actions at the international level

32. Options that could be considered at the international level include:

A. Inter-linkages among issues

- Supporting developing countries in the formulation of national sustainable development strategies that address energy, industrial development, climate change and air pollution/atmosphere issues in an integrated and coherent manner
- Supporting capacity-building processes that lead to the formulation of policy decisions and actions that emphasize the integration of all four issues and that identify and optimize co-benefits.

B. Cross-cutting issues

- Supporting budgeting processes that identify gender impacts and utilize needs assessment tools
- Training for women to become energy technicians and producers of simple energy technologies to improve their ability to contribute to energy-access solutions
- Support to industry associations with outreach to women entrepreneurs
- Support to initiatives to enhance market access for African countries
- Continued support for NEPAD
- Technical support, capacity-building and financing for expanding ethanol production, and bagasse-based electricity generation in small island developing States and least developed countries
- Support for income generation activities aimed at the poor, including in least developed countries
- Capacity-building and support for diversification and specific export promotion measures to reduce poverty
- Capacity-building aimed at skills development for small and medium-size enterprise entrepreneurs in least developed countries and small island developing States
- Capacity-building aimed at strengthening primary health-care systems, such as public health monitoring, disease surveillance and control, and disaster preparedness.

C. Means of implementation

- Technical assistance to strengthen domestic credit and capital markets in developing countries, and capacity-building to strengthen technical, administrative and financial skills to maximize access to capital
- Capacity-building for an integrated approach to decision-making which enhances cooperation and coordination among relevant ministries with a view to better channelling domestic resources to activities aimed at implementing sustainable development programmes
- Strengthened roles for IFIs in investment related to infrastructure for energy and industry, including through innovative approaches to better manage risks, lower capital costs and improve loan terms
- Other financing initiatives, including more effective use of ODA, such as the investment framework for clean energy and development currently under consideration by the World Bank, and in particular facilitating the participation of developing countries in such initiatives
- The development of micro-financing mechanisms suited to the demands of small-scale service providers and enterprises, whether public utilities, community-based cooperatives or private enterprises
- Encouraging developing countries in streamlining investment frameworks to reduce transaction costs to enterprises and to attract greater FDI inflows
- Aid-for-trade initiatives to build the capacity of low-income developing countries to respond to new market opportunities
- Joint research and development programmes, technical assistance and other means of transferring advanced and cleaner technologies to developing countries, such as public-private partnerships and joint ventures
- Supporting developing countries in their efforts to establish science and technology parks for new and emerging technologies for sustainable development.

Annex I

Contribution from the African region*

The following range of policy options and actions and practical measures are drawn from the Africa review reports on the various themes and results of the Africa Regional Implementation Meeting (RIM).

Energy for sustainable development

A. Feasible, workable and acceptable policy options identified

- Develop environmentally and socially balanced hydropower projects in Africa to take advantage of the largely untapped hydropower potential of the region within the framework of the NEPAD Energy Action Plan on the development of large hydropower plants
- Promote energy diversification as a means to achieve energy security, by removing barriers for an optimal exploitation of all energy resources, including the development of environmentally and socially balanced hydropower projects in Africa
- Integrate into and implement as part of poverty reduction strategy papers and national sustainable development strategies urgent measures to scale up access to modern energy, with special attention to rural and peri-urban areas in order to achieve the internationally agreed development goals including those contained in the Millennium Declaration
- Design and implement urgent measures to modernize and assure energy efficiency of the traditional biomass energy sector so as to reduce the negative impact of its heavy usage on human health, the environment and on other issues related to the Millennium Development Goals, and ensure its overall sustainability

B. Actions and practical measures recommended and undertaken

- Enhance national capabilities of forestry services and energy agencies for wood energy planning and development to promote adequate and affordable sustainable energy services
- Develop and promote off-grid systems based on renewable energy in rural areas to increase energy access
- Increase subregional energy trade by the establishment of power pool arrangements in each subregion, and the signing of agreements for cross-border electricity, oil and gas exchange
- Scale up efforts in support of consensual African regional energy-related initiatives such as the NEPAD and the African Energy Commission energy action plans, take measures to increase the financial flow in the energy sector

* Submitted by the Economic Commission for Africa.

and strengthen human and institutional capacities in energy planning, analysis, decision-making and policymaking

- Support the operationalization of power pool arrangements in each subregion, and the implementation of their master plans of action for the development of cross-border electricity, oil and gas exchange networks
- Design and implement energy access scale-up initiatives, particularly in rural areas, including new and innovative energy supply schemes and mechanisms that promote the development of productive and income generation activities, entrepreneurship, the utilization of indigenous energy resources, increased efficient energy consumption, and easier access to finance
- Enhance national capabilities of forestry services and energy agencies for wood energy planning and development, and design urgent measures to increase the provision of clean and affordable energy resources such as liquefied petroleum gas (LPG), for cooking and heating in households.

Air pollution and atmosphere

A. Feasible, workable and acceptable policy options identified

- Promote and adopt an integrated and regional approach in addressing air pollution and atmospheric issues
- Significantly scale up best practices and tested air pollution reduction and mitigation options in all sectors

B. Actions and practical measures recommended and undertaken

- Establishment of global atmosphere watch station for sub-Saharan Africa which provides measurements for long-term accounting of greenhouse gases and aerosols and the complex atmospheric chemical reactions which determine the depletion, transformation, lifetimes and transport of these gases and particles that contribute to climate change
- Implementation of the International Geosphere Biosphere Programme, which supported many regional and global scale studies focusing on emissions from Africa, through its International Global Atmospheric Chemistry core project

Climate change

A. Feasible, workable and acceptable policy options identified

- Enhance and promote policy coherence and integration of climate change mitigation and adaptation concerns into priority development policies and programmes including poverty reduction strategy papers
- Increase African countries' access to the funds and benefit from the Kyoto Mechanisms and Marrakech Funds by improving technical and institutional competence, establishment and operationalization of Designated National

Authorities and reducing the high transaction costs and streamlining the approval processes

- Support and accelerate the development and implementation of National Adaptation Programmes of Action

B. Actions and practical measures recommended and undertaken

- Implementation of projects to carry out assessment of the impact and adaptation to climate change and support to African countries to prepare National Adaptation Programmes of Action
- Establishment of climate forums such as the Southern African Regional Climate Outlook Forum for the Southern African Development Community subregion to enhance subregional cooperation on climate and for early warning and improved information sharing to reduce farmer and other vulnerabilities within the subregion

Industrial development

A. Feasible, workable and acceptable policy options identified

- Identify and facilitate access to financing options for the industrial sector to enable them to acquire state of the art sustainable production and efficient use technologies
- Promote global cooperation and partnerships for the development and implementation of cleaner production processes and adoption of new and safer technologies

B. Actions and practical measures recommended and undertaken

- Facilitating access to finance and technology transfer, capacity-building for growth-oriented and competitive micro and small-scale enterprises development, and increased empowerment of women, resulting in the establishment of agro-processing and micro and small-scale enterprises to foster rural development
- Establishment of National Cleaner Production Centres
- Development of policies for investment promotion and foreign direct investment, including the launching of UNIDO-Africa Investment Promotion Agency Network and various other national and subregional investment promotion efforts.

Annex II

Contribution from the Economic Commission for Europe region*

Energy for sustainable development

A. Policy options that have been identified in the ECE region

- ECE region offers huge potential for energy efficiency and energy savings. However, barriers need to be overcome for energy efficient measures to deliver their full potential; requiring education and awareness-raising, fostering behavioural change, regulatory and energy pricing reforms, emissions trading, and the establishment of adequate financing instruments
- Security of supply is of particular concern to the ECE region, and needs to be reinforced by diversifying both geographical and fuel sources, securing adequate investment in production, transport and distribution infrastructure, and deepening political dialogue between producer and consumer countries
- Diversification of energy supplies needs to include increasing the share of renewable energy, in line with the ECE regional commitment ahead of the World Summit on Sustainable Development, decreasing the environmental impact and carbon intensity of fossil energies and improving the energy efficiency of energy transformation and networks
- ECE region has a leading role to play in increasing research, development and demonstration of energy technologies, reducing unit costs and making these technologies available to countries with emerging and developing economies

B. Possible actions and practical measures that have been undertaken with success in the ECE region and/or those which have been recommended and are under active implementation by Governments

- ECE Project on Financing Energy Efficiency Investments for Climate Change Mitigation will provide for the establishment of a public-private partnership dedicated fund to finance energy efficiency investments in ECE countries with economies in transition. The project will promote the formation of an energy efficiency market in Eastern Europe, Caucasus and Central Asia so that cost-effective investments can provide a self-financing method of reducing Greenhouse Gases
- Facilitation of development of coal mine methane projects, which offer economic, social and environmental benefits to the local communities. An ECE project is under way to overcome the technical, economic and institutional barriers to development of such projects in Central and Eastern Europe and Eastern Europe, Caucasus and Central Asia and will result in a road map for financing coal mine methane projects and a tool kit to assist potential project sponsors

* Submitted by the Economic Commission for Europe.

- ECE has issued a set of guidelines for policymakers on reforming energy prices and subsidies (ECE/ENERGY/54), which were endorsed by Environment Ministers in Kiev in May 2003. Follow-up is now being undertaken to assess the impact and extent of the implementation of these guidelines across the ECE region.

Other issues of the Commission on Sustainable Development at its fifteenth session

- The ECE Strategy for Education for Sustainable Development adopted in 2005 provides a practical instrument to incorporate key themes of sustainable development in all education systems. Countries agreed to develop indicators to assess its implementation, organize thematic and subregional workshops and compile good practices in education for sustainable development
- The ECE Convention on the Transboundary Effects of Industrial Accidents aims at improving industrial safety and harmonizing safety standards across the ECE region. An internationally supported assistance programme is being implemented to address the challenges faced in the implementation of the Convention in Eastern Europe, Caucasus and Central Asia and South-East Europe countries
- Implementation of the ECE Convention on Long-range Transboundary Air Pollution and its protocols is key to effective air pollution control across the region. The Convention secretariat is making outreach efforts to share the experience of the Convention with other regions to reduce air pollution and address the increasingly prominent problems caused by intercontinental transport of air pollution. The increasing involvement of non-ECE states in the activities of the Convention sets a good stage for interregional cooperation on air pollution problems
- The Transport, Health and Environment Pan-European Programme addresses key challenges for the region to achieve more sustainable transport patterns and a closer integration of environmental and health concerns into transport policies.

Annex III

Contribution from the Latin America and the Caribbean region*

A. Policy options that have been identified in the Latin American and Caribbean region that are feasible, workable and acceptable to the region

Energy

- Several countries have implemented incentive mechanisms to accelerate market penetration of renewable energy sources and the development of biofuels, such as direct subsidies, active promotion of these alternative energy sources and regulation requiring a certain percentage share of renewable energy sources in national energy matrices to be achieved by some target date
- Implementation of energy efficiency policies throughout industrial, transport and household sectors to revert current trends of stagnant energy intensity. These include the development of energy efficiency standards (i.e., buildings, equipment), regulation and pricing policies to enhance energy efficiency, productivity and competitiveness across productive sectors, particularly in energy and natural resource intensive sectors facing continued high growth in the years ahead

Industrial development

Countries continue efforts to improve the management of environmental impacts of industrial activities and to promote investments in efficient and clean technologies, such as:

- **Cleaner production policies**. The majority of Latin American and Caribbean countries have put in place programmes and instruments designed to accelerate the absorption of cleaner and more efficient technologies in the industrial sector, and raising competitiveness through savings in energy use and raw material throughput
- **Recycling and reuse policies**. A large number of countries are promoting recycling and reuse through market creation for reusable waste products, and improved landfill and waste management, including improved economic opportunities for deprived social groups traditionally engaged in recycling and reuse activities
- **Promotion of markets emphasizing sustainable development criteria**. Several countries are actively promoting the creation of new markets through labelling and certification schemes for environmental goods and services, organic agriculture, and other products whose production incorporates social and environmentally responsible criteria

* Submitted by the Economic Commission for Latin America and the Caribbean.

Air/atmospheric pollution

The experiences of countries like Brazil, Chile and Mexico in managing air pollution have aroused interest among other countries, including actions such as:

- **Pollution control plans**: Involving integrated strategies and instruments based on health safety, mobilizing various levels of the public sector, as well as private firms, citizens and concerned groups
- **Sustainable cities programmes**: Many cities report successful applications of policies to promote bus rapid transit systems and some non-motorized mobility, urban planning and green areas

Climate change

Natural disasters as a consequence of climate change are a threat, and discussion of adaptation options and policies have been initiated, particularly in the Caribbean. These include natural disaster risk management actions, development of infrastructure, risk management procedure manuals, and many others. A majority of countries have implemented national offices and programmes to promote participation in the Kyoto Protocol Clean Development Mechanism. Projects in Latin America and the Caribbean have experienced significant growth since November 2005.

B. Possible actions and practical measures undertaken with success in the Latin American and Caribbean region and/or recommended and under active implementation by Governments

The following are examples of actions and practical measures implemented by countries which could be identified as concrete initiatives in all the above-mentioned topics.

Energy: Development of biofuels in Brazil and Central America. Energy integration schemes (Andean countries, Mercosur, Caribbean)

Industrial development: Clean production policies in Argentina, Chile and Colombia. Cross-cutting environmental/industrial initiatives in Mexico. Some Pollutant Release and Transfer Registers developed

Air/atmospheric pollution: Improvements in pollution abatement plans in Mexico and Sao Paulo

Climate change: Natural disaster investments in infrastructure in the Caribbean. Clean Development Mechanism initiatives in most countries, and some Greenhouse Gases inventories completed.

Annex IV

Contribution from the Asia and the Pacific region*

A. Policy options that have been identified in the Asia and the Pacific region

The following policy options under each thematic issue are of priority for the Asia and the Pacific region: (i) to accelerate the diversification of energy resources, with a focus on renewable energy and use of advanced environmentally sound technologies to widen access to energy services, support energy infrastructure development and improve energy efficiency; (ii) to foster sustainable industrial development, particularly SMEs, through promotion of markets for goods and services, expansion of environmentally sound technologies, production and marketing competitiveness and standardization of regulatory requirements; (iii) to promote the internalization of environmental costs in infrastructure investment decisions, change unsustainable production and consumption patterns and curb deteriorating air pollution, including indoor air pollution; and (iv) to address the climate change issue through mitigation and adaptation measures for agriculture, energy, forestry, human settlements, industry and marine ecosystems, more efficient use of fossil fuels and penetration of renewable energy in the energy mix, strengthening energy efficiency measures and regulations for energy use. In supporting such policy options the diversity of the Asia and the Pacific region calls for attention to the unique features of least developed countries, landlocked developing countries and small island developing States. In order to support the implementation of the policy options, necessary means of implementation would include: transfer of technology to developing countries, financial schemes to upgrade infrastructures and systems, enhanced cross-border regional and subregional collaboration, and integration of major groups to planning and decision-making.

B. Possible actions and practical measures that have been successful

With the successful outcome of the Fifth Ministerial Conference on Environment and the Pacific, held in Seoul in March 2005, "Green Growth", or environmentally sustainable economic growth, was unanimously endorsed as a new approach to move towards sustainable development. With the emergence of the new paradigm to address environmental problems through eco-efficiency of economic consumption, the "Green Growth" concept has provided the platform for policy dialogues on issues such as green tax and budget reform, sustainable consumption, and sustainable infrastructure development. The Asia-Pacific Regional Implementation Meeting was organized to discuss challenges and constraints to sustainable development and to seek lessons and success cases for determining policy options. Aiming to promote energy cooperation, the intergovernmental collaborative mechanism on energy cooperation in North-East Asia was established. Urban environmental policies and good practices, including measures to mitigate air pollution from point sources, were promoted through networks, information exchange, feasibility studies and pilot projects. National training workshops on the

* Submitted by the Economic and Social Commission for Asia and the Pacific.

development of national strategies for integrating rural development and energy policies and plans were conducted in seven countries. Capacity-building in strategic planning and management of natural resources in Asia and the Pacific was implemented to raise the effectiveness of policies and the energy and water resources sectors. A public-private community partnership pilot model to the provision of energy services at the community level was successfully implemented for replication. Through the Kitakyushu Initiative Network of local governments, promising policies and programmes are replicated to promote integrated and participatory approaches for the improvement of urban environmental quality, rationalization of energy and water use, and resource conscious solid waste management.

Annex V

Contribution from the West Asia region*

A. Policy options that have been identified in the Arab region

Energy for sustainable development

- The Arab energy sector has played and will continue to play an important role globally as well as within the region. It is serving as the source of oil and gas export revenues and satisfying energy needs for economic and social development. However, several challenges are facing the sector in achieving the objectives of energy for sustainable development in the region, including the rapidly increasing energy demand, lack of reliable energy supplies in rural and urban poor areas, the need to improve energy production and consumption efficiencies, limited support for renewable energy development and lack of appropriate mechanisms to support transfer of advanced energy technologies to the region
- During the last two decades, Arab countries have devoted efforts towards improving the sustainability of their energy sector, where reasonable but not sufficient progress has been achieved. The following measures and policies were identified and are gradually being adopted and promoted:

1. Enhancing access to affordable modern energy services for all communities mainly in rural and remote areas using a mix of available energy resources;
2. Upgrading energy production and consumption efficiencies, particularly in energy-intensive industries, transport and power sectors;
3. Promoting energy labelling, reviewing energy tariffs, and encouraging private ESCOs;
4. Enhancing investments in oil and gas exploration and production activities, using cleaner technologies, and adopting measures for reducing the sector's environmental impacts;
5. Promoting the use of natural gas in the power and transport sectors;
6. Developing renewable energy technologies and promote their application as appropriate to each of the country needs and resources;
7. Reviewing existing tariffs so as to support the economic management of the sector while maintaining energy subsidies for the poor;
8. Encouraging private sector participation in the establishment and management of energy facilities, including power plants and distribution networks;
9. Mobilizing funds for capacity-building, technology transfer and energy systems so as to meet increased energy demand.

* Submitted by the Economic and Social Commission for Western Asia.

Air pollution and climate change

Countries of the Arab region have exerted efforts towards assessing the sources and status of air pollution, particularly in mega cities. Ground-based monitoring networks as well as capabilities of satellite monitoring systems have been considered and the need for capacity-building on new air pollution monitoring and control techniques as well as adopting measures for mitigating climate change have also been addressed. The international community needs to support efforts to promote and implement the following policy options identified by countries in the region: (i) upgrading institutional capacities in the field of climate change; (ii) promoting technology transfer of environmentally sound technologies to the region; (iii) mitigating the impact of policies and measures adopted by the industrial countries to comply with the climate change convention.

Industrial development

Arab industry is recognizing the need to avoid or minimize waste generation through the introduction of new cleaner production technologies. Industrial environmental management is increasingly regarded in the region as an effective tool with which to improve production processes and materials and achieve efficient waste reduction, particularly in large-scale industries. Few of them have introduced the concept of the life-cycle assessment. Meanwhile, revision of environmental legislation has received increasing attention in recent years and institutional measures are being adopted to enhance industrial development. Arab countries would require greater technology transfer in the region to abate industrial pollution; this entails the encouragement of private sector development and the establishment of a national clearinghouse for waste exchange.

B. Possible actions and practical measures successful in the region and/or recommended and under active implementation by Governments

- Several Arab countries have adopted successful programmes for improving energy production and consumption efficiencies, mainly in the electric power, industrial and residential sectors. Programmes to improve energy efficiency have led to an increase in capacities of large groups, including high-level administration, engineers, technicians and the establishment of energy service companies. ESCWA is currently implementing a project for energy efficiency in the Qatari electric sector

- The Arab regional integration projects on electricity grid interconnection, gas networking have made considerable progress in recent years. A number of projects at the subregional level are at different stages of implementation and operation

- Partnership on energy for sustainable development, established through the Council of Arab Ministers Responsible for the Environment in close cooperation with ESCWA and UNEP/Regional Office for Western Africa. Several principal Arab declarations have been issued with a view to expressing

the concerns and commitments of the Arab countries in respect of the achievement of sustainable development

- The ESCWA regional promotional mechanism on energy systems for sustainable development, is a regional network of concerned authorities that proved to be effective in fostering regional cooperation, advocating for the development as well as field applications of such systems, and in building capacities of national professionals
- Several Arab countries (Egypt, Tunisia, Morocco, United Arab Emirates, and others) have implemented national programmes to promote participation in the Clean Development Mechanism. It is also worth mentioning that Saudi Arabia is taking serious steps in that direction
- Arab countries have achieved remarkable success in introducing cleaner and advanced fossil fuel technologies, such as switching to natural gas, upgrading the technologies of oil refineries, improving fuel specifications and adopting vehicles inspection and maintenance programmes.